

Chart Presentation: Innovative Teaching Method

Mechanical Engineering Department

Introduction

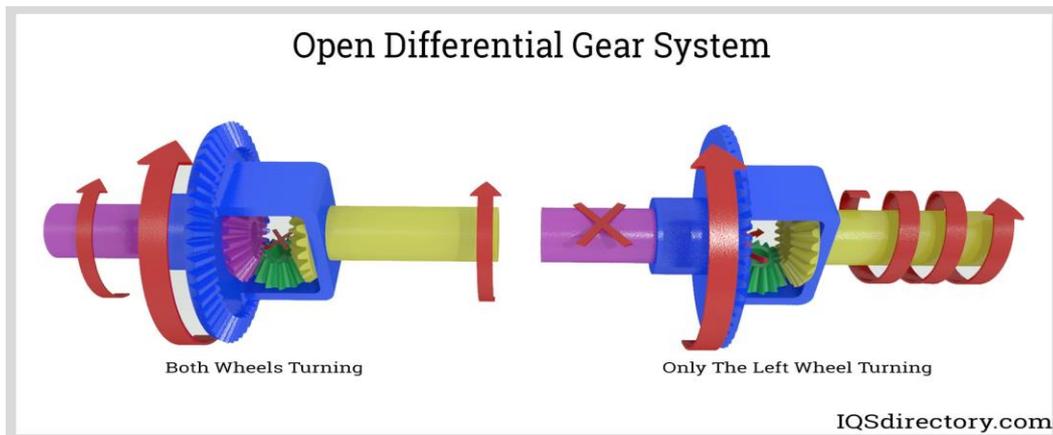
Chart preparation and presentation is an innovative teaching method that utilizes visual aids such as engineering drawings, kinematic diagrams, thermodynamic cycles, and manufacturing process flows to enhance learning in Mechanical Engineering. This method helps students demystify complex mechanical systems, thermal power cycles, and material transformations through clear, structured visual representation.

1. Purpose

The "Chart Presentation" initiative is implemented to:

- Enhance students' conceptual understanding of core mechanical principles and machine design.
- Develop technical communication skills and the ability to interpret complex engineering blueprints.
- Support **Outcome Based Education (OBE)** by fostering self-learning and peer-to-peer knowledge transfer.
- Strengthen analytical abilities by presenting technical topics like fluid dynamics and heat transfer in a graphical format.





2. Scope

This procedure is applicable to:

- **Programs:** Undergraduate (B.E./B.Tech) and Postgraduate (M.E./M.Tech) programs in Mechanical Engineering.
- **Courses:** Core theory and laboratory courses, including:
 - Thermodynamics & Heat Transfer.
 - Manufacturing Technology & CAD/CAM.
 - Design of Machine Elements.
 - Fluid Mechanics & Machinery.
- **Activities:** Both individual assignments and collaborative group projects

3. Responsibilities

Role	Responsibility
Head of the Department (HoD)	Overall approval and monitoring of the pedagogical activity.
Course Coordinator	Planning the schedule and ensuring topics align with specific Course Outcomes (COs) .

Role	Responsibility
Faculty Member	Allotting mechanical topics, providing technical guidance, and evaluating the final output.
Students	Researching technical concepts, preparing high-quality engineering charts, and explaining mechanisms.

4. Procedural Steps

Step 1: Identification of Need

Faculty identify mechanical topics that require deep visualization, such as:

- **Kinematic Linkages:** Inversion of mechanisms.
- **Power Plant Engineering:** Layout of Steam/Gas turbine plants.
- **Automotive Systems:** Intelligent Active Suspension or Braking systems.
- **Manufacturing Processes:** Plastic Injection Molding or Casting sequences.

Step 2: Topic Selection and Allotment The faculty prepares a curated list of topics and allots them to students. Guidelines are provided regarding chart size, the use of standard engineering symbols, and key operating parameters.

Step 3: Planning and Approval The Course Coordinator approves the presentation dates, duration, and the specific rubrics for evaluation.

Step 4: Chart Preparation

Students develop charts that must include:

- Title and Objective.
- Free Body Diagrams (FBD) or Process Flows.
- Mathematical Models/Governing Equations.
- Equipment/Component Cross-sections.
- Industrial Applications and Conclusions.

Step 5 & 6: Conduct and Participation Students present their work, explaining the diagram interpretation and its industrial relevance (e.g., its use in the automotive or HVAC industry). Peers participate by asking technical questions and engaging in discussions.

Step 7 & 8: Evaluation and CO Attainment Assessment is based on technical accuracy, visual clarity, and viva-voce performance. The results are then analyzed to determine how effectively the activity contributed to the attainment of **Course Outcomes (COs)** for the semester.